high density metal oxide filler, wherein the metal oxide filler is selected from the group consisting of $M_n(O)_{2n}$, $M_n(O)_{3n/2}$, $(M_1)_n(M_2)_n(O)_{2n}$, and combinations thereof, and wherein M is a metal selected from Groups IVA, VA, IB, VIB, VIIB and VIIIB metals (where M_1 and M_2 are different metals); O is oxygen; and n is the valence of the metal and wherein the metal oxide filler has a density of greater than 5.7 g/cm^3.

20. The method of Claim [19]18 wherein the high density metal oxide is bismuth trioxide.

Remarks

The Examiner has rejected claims 1-20, under both 35 USC §102(b) and 103(a) based on Okubo or Kalinowski or Lorraine or Hayashi or Morgan, alone or in combination.

Claim 1, from which claims 2-5 depend, claims a method of using high density metal oxide filler in rubber compounds, including the step of introducing the filler into a rubber elastomer for subsequent vulcanization of such rubber compound.

Kalinowski is directed to bonded abrasive products containing sintered sol gel alumina abrasive filaments. The Examiner points to col. 22, lines 30-67 in support of the 102(b) rejection. Specifically, lines 65-67 indicate that the resinoid bond is selected from the group including rubber. The claims included in lines 30-63 state that the abrasive product includes sintered alumina and a second abrasive, including other types of alumina (Al_2O_3, density 3.97 g/cm^3), and alumina-zirconia blends.

Hayashi discloses a rubber or resin composition including iron oxide particles having an iron oxide core which contains SiO_2, and a precipitate composed of silicon which adheres to the surfaces of the iron oxide core. Col. 5, lines 9-19 state that the bulk density of these particles is 0.80 to 1.50 g/cm^3, and that when the bulk density exceeds 1.5 g/cm^3, the particles are not well mixed with the rubber or thermoplastic resin.

Lorraine discloses and claims a method of forming a high density untrasonic phased array transducer, comprising the step of forming a backfill material, wherein such material comprises an epoxy loaded with particles of dense metal or metal oxide imbedded in silicone rubber. Lorraine does not disclose what types of metal oxides are acceptable or recommended, nor does it define the density of such materials.

Okubo claims a sound insulating unit having a flexible sheet of a polymeric material and a high density inorganic material, including iron and lead oxides. Okubo does not include any limitations or suggestions regarding a minimum density of the inorganic material.

Morgan is directed toward a golf ball, including a core having a liquid material including latexes of natural rubber and synthetic rubbers, and a high density filler selected from zinc oxide, barites, tungsten oxide or metal fillers. Morgan does not include any limitations or suggestions regarding minimum density requirement for the high density fillers.

None of the references cited by the Examiner discloses the vulcanization of rubber compounds containing high density metal oxide fillers.

In fact, Morgan discloses a liquid material, such as latexes of natural or synthetic rubber, which dry to form flexible films (see col. 6, line 25).